ASARCO

February 8, 1995

D. Scott Brown
Remedial Project Manager
Region VIII, Montana Office
U.S. Environmental Protection Agency
301 S. Park, Drawer 10096
Helena, Montana 69626-0096

RE: Process Pond Issues/Asarco's East Helena Plant

Dear Mr. Brown:

In your December 23 letter, you raise three issues to which I would like to respond.

First, you express concern about the fact that some water from Lower Lake is currently being treated in the HDS plant. You request an acknowledgment by Asarco that it understands that the treatment of Lower Lake water in the HDS plant has not been approved as a remedy under CERCLA. Asarco is aware of that fact. Asarco recognizes that unless it receives approval from EPA through the CERCLA process to treat Lower Lake water in the HDS plant, it will have to proceed with the in-situ treatment of Lower Lake water outlined in the Record of Decision ("ROD"). The Lower Lake water currently being treated in the HDS plant is not being treated for CERCLA purposes. It is being used as makeup water so that the HDS plant can efficiently treat the process water circuit gains before discharging them to Lower Lake.

The environmental benefit of using Lower Lake water as makeup water for the HDS plant is explained in Attachment 1. The net result is that Asarco is now discharging substantially less arsenic and metal into Lower Lake than it was when Lower Lake water was not being used. For example, the discharge of lead to Lower Lake has been reduced by 96%. And this does not even take into account the metals removed from Lower Lake in the makeup water that is being withdrawn. Asarco decided that as long as some water from the process water circuit still needed to be discharged to Lower Lake, the water should be as clean as possible.

Second, you state that you "became aware of [the discharges to Lower Lake that took place between 1991 and October 1994] only after the EPA's Water Management Division began its investigation of possible violations of the Clean Water Act." To Asarco's knowledge, the investigation began sometime in late 1993 or early 1994.

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As several of us at Asarco have a distinctly different recollection of when EPA became aware of the discharges, I took the trouble to review the files back through 1991.[1] The files reveal that you were explicitly informed in 1991 and on several occasions thereafter about Asarco's need on an interim basis to make periodic discharges of the gains from its process water circuit to Lower Lake while it was building the HDS plant. The files also reveal that not until April 1994 was there any suggestion by you that such interim discharges should be permitted under the Clean Water Act.

Record of Decision

EPA knew as early as November 1989, when the ROD for the Process Ponds Operable Unit was issued, that there was a gain in Asarco's process water circuit that could not be handled by the steel tanks alone and that would need to be eliminated before Asarco could completely cease using Lower Lake as a repository for some of its process water. To eliminate Lower Lake "as the primary settling and runoff storage pond", the ROD required Asarco to do three things. First, it was to install "two large steel tanks [to] replace Lower Lake as the plant's primary water holding facility." Second, it was to "construct a lined pond for storm runoff." Third, it was to eliminate the "50 to 70 gpm gain in the process fluid circuit" by "evaporative processes" and certain operational changes. ROD, pp. 7-6, 7-16 to 7-19 and 11-2.

Preliminary Design Report/Reduction of Process Circuit Gains

In April 1991, Asarco sent you the Preliminary Design Report/Reduction of Process Circuit Gains. In that Report, Asarco informed you that the actions required by the ROD had not succeeded in entirely eliminating the 50 to 70 gpm gain in the process fluid circuit and that it would be necessary to consider other options for dealing with the gain--i.e., discharging the gain "outside the main plant process water system."

On pp. 20 and 21, the Report notes:

> ... the initial performance expectation for the reduction of Process Circuit Gains was the achievement

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[1] Asarco's files may not be complete for the time period before October 1992. As you may recall, at that time Asarco's files on environmental matters were destroyed in a fire.

> of a null or negative plant process fluid circuit balance, allowing containment of process water within the two 1 million gallon tanks constructed to replace Lower Lake. Plant efforts for achieving this performance expectation concentrated on operational changes. The strategy was to thoroughly investigate the cause of the gains before applying an end-of-the-pipe treatment or evaporation technology. This investigation has been time consuming and has resulted in a significant reduction of process circuit gains. However, only recently [April 1991] has it been determined that operational changes cannot reduce process circuit gains to the point of achieving a null or negative plant water balance. Investigative efforts must now focus on discharge options of the remaining gains.

The Report then goes on to state that the remaining gain is approximately 25 gpm and that "[s]ince this water cannot be permanently contained (the replacement tanks for Lower Lake eventually become full), water gains must be discharged outside the main plant process water system."

Subsequent to receiving the Report, you met personally at least three times with Asarco and its consultants in June and July 1991 to discuss it. In a July 1991 follow-up letter to those meetings, Asarco's consultant, Hydrometrics, once again explained that the ROD measures had not succeeded in eliminating the gain in the process water circuit and then explained that Asarco was exploring the possibility of building a treatment plant to deal with the gain in the long-term. The letter states:

> The inability of the East Helena Plant to achieve a null balance of process water circuits was unknown until this spring following a rigorous evaluation of plant process water circuits. This evaluation consisted of installing totalizing flow meters on all significant process water circuits in early 1991 and collecting daily flow data through May 1991. Flow measurements obtained show there is approximately 50 gpm of excess process water on a continuous basis. Since there are no future options to reduce plant process water flows, preliminary negotiations were held with Tetra Tech in June and July 1991 to conduct pilot scale treatment plant studies to handle this excess water. An agreement to conduct the studies was signed in July 1991.

After receiving the Preliminary Design Report, you asked EPA's consultant, Bill Bluck, to review the Report and provide comments that you could send to Asarco. In commenting on the Report in a memorandum sent to you on May 24, 1991, and then forwarded by you to Asarco, Mr. Bluck acknowledges that "[i]t is understood that it was not expected that the treatment of process gains for discharge would be required and that work on evaluation of alternatives is just getting started." He then asks, "What are the short term ramifications of not being able to eliminate the gains in the system? Will fluids need to be contained in Lower Lake or the storage tanks until a suitable treatment system is designed and constructed?"

Pre-Final Design Report/Reduction of Process Circuit Gains

In December 1991, Asarco responded directly to Mr. Bluck's question about the "short term ramifications of not being able to eliminate the gains in the system." The Pre-Final Design Report/Reduction of Process Circuit Gains, which is dated December 1, 1991, states:

> Short-term ramification of not being able to eliminate all process circuit gains is the periodic discharges to Lower Lake, principally in months when evaporation rates are low.

Elsewhere, the Report explains in some detail why there are gains, what Asarco proposes to do with them in the long-run--i.e., build the HDS plant to treat them--and how it will dispose of them in the short-term--i.e., periodically discharge them to Lower Lake. On p. 11, the Report states:

> Prior to the construction of the two 1-million-gallon storage tanks, Lower Lake served as a large surge pond for the main process fluids circuit. Now that the storage tanks have replaced Lower Lake, the process fluid circuit surge capacity has been significantly reduced. While recent improvements to the process water circuit have significantly reduced system gains, circuit gains remain about 25 gpm and must still be discharged to Lower Lake by way of occasional releases from the storage tanks.

On p. 22, the Report states:

> The remainder of the selected remedy for addressing process circuit gains is to treat the excess water for

> removal of excess arsenic and metals. The water would be treated using a proprietary High Density Sludge (HDS) water treatment plant....A preliminary engineering report (30% completion level) describes the proposed treatment facility (Appendix A).

On pp. 22 and 23, the Report states:

> The initial performance expectation for the reduction of process circuit gains was to achieve a null or negative plant process fluid circuit balance, allowing containment of process water within the two 1-million-gallon tanks constructed to replace Lower Lake....It was determined at the end of May 1991 that operational changes cannot reduce process circuit gains to the point of achieving a null or negative plant water balance....Since this water cannot be permanently contained (the replacement tanks for Lower Lake eventually become full), water gains must be discharged outside the main plant process water system.

On January 30, 1992, you forwarded to Asarco the comments that you had asked Bill Bluck to prepare on the December 1 Pre-Final Design Report. In those comments, he stated: "Based upon review of Appendix A, it appears as though the conclusions reached as regards the necessity to treat the process fluid gains and the method of treatment proposed are appropriate." No concern is expressed about Asarco's short-term need to discharge its process water circuit gains periodically to Lower Lake while the HDS plant is being built. Similarly, in your cover letter, although you do express concern about Asarco's long-term plans for the discharges from the HDS plant once it is built, you do not express any concern about Asarco's interim discharges to Lower Lake.

It is thus clear from our records that you knew as early as 1991[2] that:

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[2] You were also told about the discharges after 1991 and before the Water Management Division began its investigation. For example, in the Preliminary (30%) Design Report for the Lower Lake Remediation, which was sent to you on October 5, 1993, it states:

> Because of a plant process water circuits gain in cool weather months, periodic discharges of excess process

(continued...)

1) the gains from the process water circuit could not be completely eliminated, as contemplated by the ROD;

2) the gains would therefore need to be discharged outside the water circuit;

3) Asarco proposed to build an HDS plant to treat the gains before discharging them; and

4) in the meantime, Asarco would have to periodically discharge the gains to Lower Lake.

Finally, in your letter, you state that it is unclear why Asarco did not separately report the discharges into Lower Lake that were made between 1991 and 1994 under Paragraph C. of the monthly Progress Reports that were filed with you. Asarco did not view the discharges as a "deviation" from the Work Plan, which is what Paragraph C. concerns. The discharges were not in any way a departure from what the Work Plan required Asarco to do. Moreover, Asarco did faithfully report the progress that was being made on the construction of the HDS plant, which was a predicate to eliminating the need to discharge the gain to Lower Lake. At your request, however, Asarco will report the discharges made to Lower Lake in the future in monthly Progress Reports.

Sincerely,

Jay A. Spickelmier

Jay A. Spickelmier

cc: John Wardell
Bob Fox
Suzanne Bohan
Paul Montgomery
Bruce Kent
Andy Young
Max Dodson
Thomas Speicher
Curtis Bates
Robert Litle

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[2](...continued)
water to Lower Lake will continue until a new water treatment facility is on-line....

Report, p. 1-4.

Hydrometrics, Inc.

2727 Airport Road • Helena, Montana 59601 • (406) 443-4150 • FAX (406) 443-4155

MEMORANDUM

TO: Richard C. Marcus
ASARCO Incorporated

FROM: Bob Braico and Bob Kimball
Hydrometrics, Inc.

DATE: February 7, 1995

SUBJECT: Examination of Discharge Alternatives for the East Helena Plant's HDS Water Treatment Facility

In regard to recent telephone conversations, enclosed are the two alternatives under which water has been discharged from the East Helena Plant to Lower Lake. Alternative No. 1 (Figure 1) represents current conditions, that is, it represents a direct discharge of HDS Water Treatment Plant effluent to Lower Lake for the period November 1, 1994 through January 31, 1995. Flows used in this calculation were based on plant records. Please note that under this alternative, an average of 16.5 gpm of makeup water is withdrawn from Lower Lake. This makeup water is required for efficient operation of the HDS water treatment plant.

Alternative No. 2 (Figure 2) represents circuitry before the pipeline between the HDS plant and Lower Lake was installed in late 1994. Under this alternative, effluent from the HDS plant was returned to the Plant Water Circuit where it was commingled with Plant Water. Excess Plant Water was then returned to Lower Lake via a pipeline between the Plant Water Circuit and Lower Lake. The Plant Water Circuit discharge to Lower Lake shown in Figure 2 was back calculated using HDS Plant Discharge, Water Gains and Neutralized Acid Plant Scrubber Water flow values obtained from Figure 1. Makeup water from Lower Lake does not occur with Alternative No. 2.

Using flow values shown in Figures 1 and 2 and the most current water quality data, loads of arsenic, cadmium, copper, lead, and zinc from the East Helena Plant to Lower Lake were calculated (Table 1). Similarly, removals of arsenic and metals which occur as a result of the makeup water withdrawal, were also calculated. A comparison of the two alternatives shows the arsenic and metals loads from the East Helena Plant to Lower Lake are substantially less under Alternative No. 1 than under Alternative No. 2. In addition, since Alternative No. 1 also removes and treats 16.5 gpm of Lower Lake water in the HDS plant, significant quantities of both arsenic and metals are also removed from Lower Lake water with this alternative. Under Alternative No. 2, Lower Lake water is not treated and there is no removal credit.

cc: Jay Spickelmier

TABLE 1. SUMMARY OF EAST HELENA PLANT ARSENIC AND METALS LOADS TO AND REMOVAL FROM LOWER LAKE

All values in lbs/day

DESCRIPTION	ARSENIC		CADMIUM		COPPER		LEAD		ZINC	
	Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 1	Alt. 2
ARSENIC AND METALS ADDED TO LOWER LAKE										
HDS Discharge	0.161	0.000	0.031	0.000	0.015	0.000	0.010	0.000	0.015	0.000
Plant Water Discharge	0.000	0.225	0.000	0.159	0.000	0.034	0.000	0.275	0.000	0.323
ARSENIC AND METALS REMOVED FROM LOWER LAKE										
Make-up Water	(1.189)	0.000	(0.020)	0.000	(0.013)	0.000	(0.082)	0.000	(0.042)	0.000
SUMMATION OF ARSENIC AND METALS ADDED OR REMOVED FROM LOWER LAKE										
Gain (Loss)	(1.028)	0.225	0.011	0.159	0.003	0.034	(0.073)	0.275	(0.026)	0.323

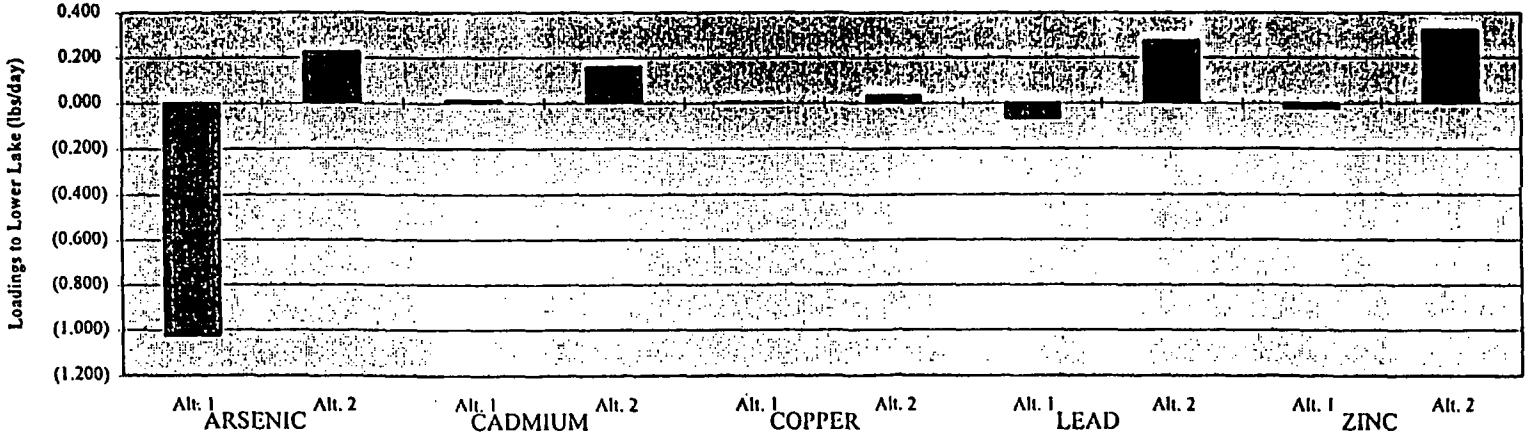

FIGURE 1: ALTERNATIVE 1

Water Gains

Stormwater

Upper Lake Blowdown

Groundwater

Moisure in Conc.

Moisture from Combustion of Air/Fuel in Sinter Plant

Legend

P = Precipitation

E = Evaporation

GI = Groundwater Influx

S = Seepage

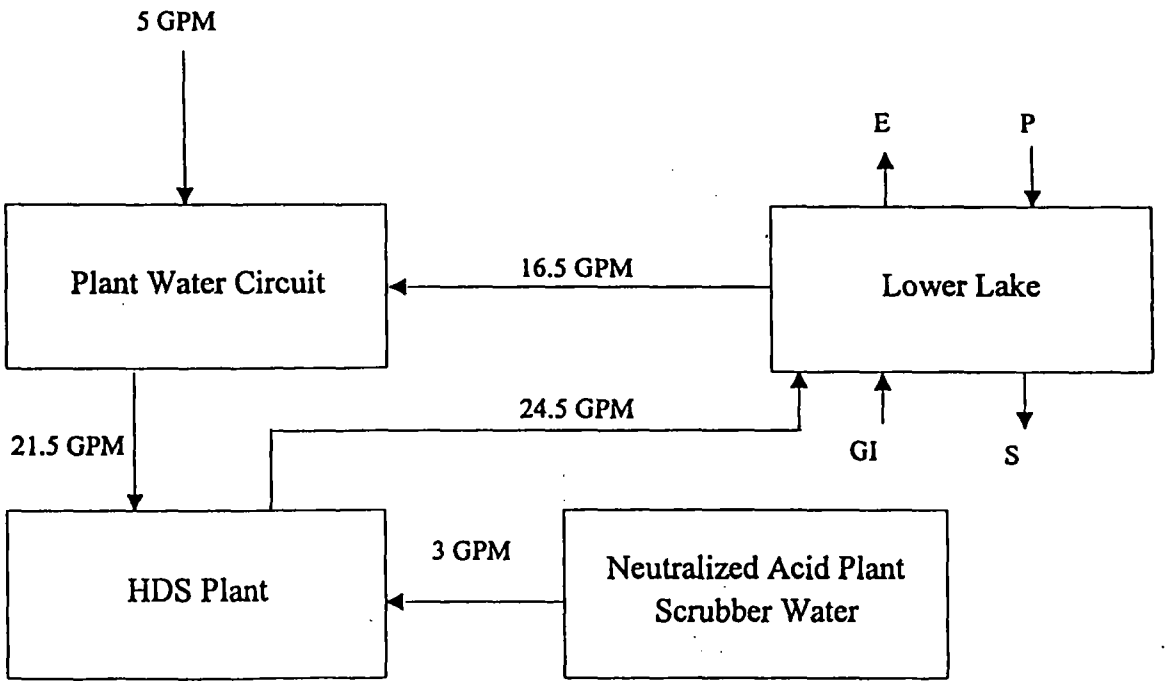

FIGURE 2: ALTERNATIVE 2

Water Gains

Stormwater

Upper Lake Blowdown

Groundwater

Moisure in Conc.

Moisture from Combustion of Air/Fuel in Sinter Plant

Legend

P = Precipitation

E = Evaporation

GI = Groundwater Influx

S = Seepage